The link between non-property crime and house prices – Evidence from UK street-level data

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Abstract:

This paper uses street-level data on house sales and crime rates for England and Wales to look at the existence of compensating differentials for crime risk. In terms of identification my strategy relies on the use of non-parametric regional time trends as well as various fixed effects to control for unobserved amenities and regional economic conditions. The results suggest that each additional case of anti-social behavior lowers house prices in the same street by approximately 1% and each additional case of violent crime by 2%. Drug crime does not appear to matter, as does crime outside of the respective street.

Keywords: cost of crime; compensating differential; house prices

JEL Classification: H40, K00, K42, R21, R23, R31

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All analyses used Stata 11.2. Do-Files are available from the author on request. All analyses and opinions expressed in this paper as well as any possible errors are under the sole responsibility of the author. The data is released under Open Government Licence for public sector information (http://www.nationalarchives.gov.uk/doc/open-government-licence/). The land registry data covers the transactions received at land Registry in the period February 1st, 2012 to July 31st, 2012 and is covered by Crown copyright. If you have found an error with the data, please contact Her Majesty's Land Registry (HMLR).

1. Introduction

A large literature in economics has been concerned with estimating the social cost of crime. The most common approach in that literature has been the calculation of compensating wage differentials in either wages or house prices as predicted by models by Roback (1982, 1988), who also provides some evidence.[1] The logic underlying this approach is that regional amenities or disamenities influence the utility of individuals living or working in a region and consequently their willingness to buy a house at a certain price or to work for a certain wage. Other papers following this approach include, inter alia, Gerking and Neirick (1983), Blomquist et al. (1988), Smith (2005), Schmidt and Courant (2006) and Braakmann (2009) for wages and Bowes and Ihlanfeldt (2001), Lynch and Rasmussen (2001) and Gibbons (2004) for house prices.[2]

In contrast to most of the earlier literature that tended to use larger area crime rates, e.g., city or county crime rates[3], this paper uses street-level crime data linked with data on all property purchases in England and Wales from February 2012 to July 2012. The property data are available from the land registry and contain information on the price paid, the location of the property, specifically the exact address, and some limited information on the property itself such as whether it is newly constructed or whether it is a flat or a certain type of house. Using the address information, I combine this data with street-level crime data from

[1] Other examples are willingness to pay studies for the avoidance of victimization relying on stated preferences (Ludwig and Cook, 2001; Cohen et al., 2004; Atkinson et al., 2005).
[2] Other papers have considered non-monetary costs of crime such as forced behavioral changes (e.g., Hamermesh, 1999; Braakmann, 2012a), effects on well-being (Powdthavee, 2005) or effects on mental and physical health (Braakmann, 2012b).
[3] Notable exceptions are Gibbons (2004), Linden and Rockoff (2008) and Pope (2008) who use small scale crime data for a single city or county.

www.police.uk, a website operated by the British police since December 2010 that contains monthly reports on the location of various types of crime.[4]

Empirically identifying compensating differentials for crime rates has been proven to be challenging for at least two reasons. First, crime rates will generally be correlated with other regional factors that are likely to influence crime, some of which might be time-varying such as economic conditions[5], and some of which might be unobserved, such as changes in other regional (dis-)amenities. Second, there is evidence that regional crime rates have an influence on the location decisions of businesses (e.g., Cullen and Levitt, 1999; Abadie and Dermisi, 2008), which might lead to indirect reverse causality as crime might influence local labor market conditions that in turn might influence crime.

Relying on house prices instead of wages has some further advantages in this context: First, the theory of compensating differentials is derived using competitive markets, which is generally a debatable assumption for labor markets (see, e.g., Manning 2003, 2011). Housing markets are in comparison relatively unregulated, which makes it more likely that differences in (dis-)amenities show up in prices. Second, while looking at wages always leads to concerns regarding selective regional mobility and sorting of workers into regions (see, e.g., Braakmann, 2009, section 4.5), properties are generally immobile.

Using street-level data allows me to address the empirical challenges in a relatively simple way. First, I am able to use low-level regional fixed effects, roughly on the level of neighborhoods or alternatively city quarters, that can be expected to capture most of the

[4] Interestingly the daily press suspected early on that the better information about crime that the public receives through the publication of these maps might have an effect on house prices, e.g., Collins (2011).

[5] For the link between economic conditions and crime see, e.g., Piehl (1998) or Freeman (1999) for surveys and Reilly and Witt (1996), Carmichael and Ward (2001), Raphael and Winter-Ebmer (2001), Gould, Weinberg and Mustard (2002), Edmark (2005) and Braakmann (2012c) for recent evidence.

regional (dis-)amenities that would matter for house prices. These low-level fixed effects are likely to capture more unobserved factors than city or county dummies as used in previous papers (e.g., Braakmann, 2009). Second, it is important to note that most of the unobserved time-varying factors that influence crime will vary on a higher level of aggregation than the street. Labor market conditions, for example, will generally vary on the level of the local labor market, which is closer to the city rather than to any particular street. To capture these factors I rely on the inclusion of city/local authority*month dummies or in some specifications city-quarter*month dummies that can be expected to capture most, if not all common time-varying confounders. Third, the fact that I use data for half a year (as opposed to several years as in most of the previous literature) attenuates remaining concerns regarding reverse causality of the type described above, simple because businesses will not have had much time to react to eventual changes in crime rates. Finally, I focus on crimes that are plausibly uninfluenced by the value of the respective property, specifically anti-social behavior[6], violent crime and drug crime (possession, production and distribution of drugs). To make the importance of this restriction clear it is helpful to consider a property crime such as burglary: Here, it might be possible that more expensive (and presumably more luxurious) houses are more likely to be burgled, which could lead to a positive correlation between house prices and burglary. If, at the same time, burglary risk reduces house prices, we have a case of direct two-way causality where the total effect could be positive, negative or zero. For non-property crimes these problems can be expected to be less severe, in particular as the neighborhood fixed effects would capture that certain (say, deprived) areas might have

[6] The notion of "anti-social behaviour" was introduced in the 1998 Crime and Disorder Act with some changes being introduced in the 2003 Anti-social Behaviour Act. It basically describes acting "in a manner that caused or was likely to cause harassment, alarm or distress to one or more persons not of the same household as himself [the perpetrator]" (Part I, Chapter 1, Section 1 of the Crime and Disorder Act 1998).

permanently higher levels of anti-social behavior, violent crime and drug crime and permanently lower house prices.

The previous literature on house prices is relatively sparse and usually based on evidence from a single city such as Atlanta (Bowes and Ihlanfeldt, 2001), Jacksonville (Lynch and Rasmussen, 2001) or London (Gibbons, 2004) or on data from some other small region such as Mecklenburg County in North Carolina (Linden and Rockoff, 2008) or Hillsborough County in Florida (Pope, 2008). In contrast this paper uses data for the whole of England and Wales, including rural and urban areas. The general conclusion that can be drawn from the literature, regardless of whether the estimates are based on a selection-on-observables assumption as in Bowes and Ihlanfeldt (2001) or Lynch and Rasmussen (2001) or an instrumental variables strategy as in Gibbons (2004), is that crime has a negative effect on house prices or values. These effects are found for various types of crime and are generally economically large: Bowes and Ihlanfeldt (2001) find a 3–5.7% decrease in housing prices for one additional crime per acre. Lynch and Rasmussen (2001) find a 4% decrease in housing prices for a one-standard-deviation increase in violent crimes, and an insignificant increase in prices for higher levels of property crime. Finally, in the only other study for Europe, Gibbons (2004) results show a 10% decrease in housing prices for a one-standard-deviation increase in criminal damage to property and an insignificant relationship with burglary. Finally, two recent studies look at the related but slightly different question whether living close to a convicted sex offender reduces house prices (Linden and Rockoff, 2008; Pope, 2008). Both studies find that having a registered sex offender moving into a house close by reduces house prices by between 2% (Pope, 2008) and 3 to 4% (Linden and Rockoff, 2008). Both studies also find evidence that these effects are very localized and quickly decline with distance to the offender.

These results are confirmed in this paper: I find a roughly 1% decrease in house prices

for each additional case of anti-social behavior in the same street as the property. Each additional violent crime leads to an approximately 2% drop in prices, while drug crimes do not seem to have an effect. Similarly in spirit to results of Pope (2008) and Linden and Rockoff (2008) crime in the wider area, e.g., the neighborhood or the city-quarter does not seem to have an effect on prices once crimes in the same street are accounted for.

The rest of the paper is organized as follows: Section 2 and 3 describe the data and the estimation approach respectively. Results can be found in section 4. Section 5 concludes.

2. Data

The data used here come from two sources – www.police.uk, a website created by the British police that provides monthly street-level information on recorded crimes and the land registry, which records all property sales in the UK. The first source was set up by the British police in 2010 as part of the open-data initiative of the British government. It provides street-level maps of recorded criminal offences for each month since December 2010 and also allows the download of the underlying data. The prevalence of crime is measured on a monthly basis by the counts of recorded offences in several categories, specifically "Anti-social behavior", "Burglary", "Criminal damage and Arson", "Drugs", "Other Theft", "Other crime", "Public Disorder and Weapons", "Robbery", "Shoplifting", "Vehicle crime" and "Violent crime". As explained in the introduction I only use information on anti-social behavior, drug crimes and violent crimes as these are (a) plausibly exogenous when it comes to house prices and (b) relatively common compared with other plausibly exogenous crimes such as public disorder and weapons.

The property data come from the UK land registry, a government department founded in 1862 that serves as the central registry for all land owners in England and Wales. The data

used here is the so-called price paid data[7] that has been made publicly available from February 2012 onwards. The version used here contains all property sales in England and Wales from February to July 2012, which is the latest available information at the time of writing. The data contain information on the full address of each property, the price paid, the date of transaction, the property type (flat, terraced house, semi-detached house or detached house), whether the property is newly built and whether the property is freehold or leasehold.

Both data sets are merged based on a combination of coordinates and UK unit postcodes, which are roughly equivalent to streets or parts of streets. In a first step all crimes in each month are merged to the nearest postcode based on latitude and longitude, where "nearest" means the smallest geodetic distance between the coordinates of the crime and the coordinates of the postcode calculated using formulas derived by Vincenty (1975).[8] The crimes are then aggregated to monthly counts in each category per postcode. I also calculate two measures of wider-area crime, specifically the total number of crimes (excluding the number in the respective postcode) in each category by lower layer super output area (LSOA) and by middle layer super output areas (MSOA). Lower and middle layer super output areas are spatial units used by the UK census to present data in a consistent way over time. Both are relatively small spatial units: According to the Small Area Population Estimates by the Office for National Statistics, LSOAs have on average 1600 inhabitants, while MSOA have an average population of 7700 (as of mid-2010). One can think of both as being close to city quarters or – in the case of LSOAs – even smaller neighborhoods. In a second step this postcode-crime data is merged to the property data based on the postcode and month.

In the resulting data set each property sale is one observation with measures of crime recorded for the postcode/street where the property is situated and two measures of wider

[7] See http://www.landregistry.gov.uk/public/information/public-data/price-paid-data.
[8] This uses the Stata ado-file geonear by Robert Picard.

area crime, specifically LSOAs and MSOAs. The final sample consists of 338,978 observations.

(TABLE 1 AROUND HERE.)

Table 1 contains descriptive statistics for the estimation sample. Note that both the minimum and maximum price for a property seem rather extreme. While both are also plausible – a price of £1 is a sign for an auction gone badly and there are houses in the UK, in particular in London, that sell for £55m – the robustness of the estimates will be checked on a subsample where the top and bottom 1% of all prices have been dropped. Descriptive statistics for this subsample can be found in the lower panel of table 1.

3. Estimation strategy

I estimate regressions of the form

$$ln(p_{irlt}) = X_i'\beta + \tau * c_{irlt} + \gamma * \dot{c}_{rlt} + \eta_{lt} + \alpha_r + \varepsilon_{irlt}, \qquad (1)$$

where $ln(p_{ircl})$ is the natural logarithm of the price for property i in city quarter r in local authority l at time t. X_i contains a set of property characteristics. c_{irlt} is the crime count for the respective street/postcode in which the property is situated and $\dot{c}_{rlt}$ is the wider area crime count, i.e., the number of crimes committed in the same LSOA or MSOA outside of the respective street. α_r are a set of city quarter fixed effects, depending on the specification either for LSOAs or for MSOAs, and η_{lt} contains local authority-month fixed effects or in some specifications MSOA-month fixed effects. Finally, ε_{irlt} is a standard error term. Standard errors are clustered on the LSOA level.

When trying to estimate compensating house price differentials for crime risk, there are three econometric issues that one needs to be worried about. First, crime risk is likely to be correlated with a range of other regional amenities such as housing quality, the extent and

quality of public services such as schools, libraries or public transport or the type of persons one is likely to get as a neighbor. To the extent that these are time-constant over the half-year period studied in this paper, they will be captured by the city quarter fixed effects α_r. Note that MSOAs and in particular LSOAs are fairly small spatial units, i.e., it seems likely that most regional (dis-)amenities that matter for individuals' buying decisions will be captured by these fixed effects.

Second, one might be concerned about the influence of the region's economic situation and local labor market conditions. The original Becker (1968) model of crime emphasizes the role of legal work opportunities and empirical evidence has been found for a link between economic conditions and crime.[9] Furthermore, it seems likely that a region's economic conditions will have some impact on house prices, even in the relatively short period considered in this paper. When talking about economic conditions, it is important to be aware that we would not generally expect economic conditions in the respective street to matter. Instead legal work opportunities for someone living in a certain street will be more likely determined by the overall economic conditions in the local labor market. These in turn can easily be captured by the region-month effects η_{lt}. The region-month fixed effects either refer to local authorities, which are roughly equal to cities or to larger rural areas or even smaller spatial units such as MSOAs (city quarters). Note that estimates based on these two specifications are usually very similar indicating that not much of importance is missed by the local authority-month effects.

Finally, a remaining concern could be direct reverse causality running from the price of property *i* to the risk of property *i* being affected by crime. This reverse causality could potentially be much stronger compared with papers using city-wide crime rates simply

[9] See Piehl (1998) and Freeman (1999) for surveys and Reilly and Witt (1996), Carmichael and Ward (2001), Raphael and Winter-Ebmer (2001), Gould, Weinberg and Mustard (2002), Edmark (2005) and Braakmann (2012c) for recent evidence.

because a single criminal offence would constitute a much larger relative increase in crime on the street than on the city level. This is, however, mainly an issue for property crimes such as burglary. Here it would be easy to argue that more expensive and consequently bigger or nice houses that are more likely to be inhabited by richer people are more likely to be burgled, which would lead to a positive correlation between $ln(p_{irct})$ and c_{irlt}. If, at the same time, burglary risk is a disamenity that lowers house prices, we would end up with two-way causality and might find a positive, negative or zero effect depending on which effect is stronger. The way I deal with this issue in this paper is to focus on crimes that are plausibly uninfluenced by property values, in particular anti-social behavior, e.g., noise or public alcohol consumption (in some areas), violent crime and drug crimes. It should also be stressed that the city quarter effects will capture factors such as whether the area has many pubs and a flourishing nightlife or whether it is deprived in general.

The variation used to identify the effects in this paper come from within-city quarter within-region-month variation in crime rates and house prices. In other words, I exploit the fact that in some months some houses that are on the market will experience higher street-level crime rates than other houses that go on the market in the same city quarter in either the same or a different month, while taking into account trends in the wider region.

4. Results

Consider first the base results displayed in table 2. Column (1) contains the most basic estimates excluding property characteristics, which are added in column (2). Columns (3) to (5) then add either LSOA or MSOA crime rates or both as additional regressors. The first thing to note is that columns (2) to (5) generally show very similar results for the street level crime rates: All suggest a effect of anti-social behavior and violent crime on house prices, while there does not seem to be a statistically significant relationship with drug crime. Point

estimates also have the expected (negative) sign and are economically large whenever they are significant. For anti-social behavior each additional crime leads to a drop in house prices by approximately 1%, while each additional violent crime leads to a drop by 2%. Expressed in terms of standard deviations the results suggest a roughly 0.5% decrease in house price for a one standard deviation increase in either anti social behavior or violent crime. The second thing to note is that the impact of LSOA or MSOA level crime is essentially zero after crimes in the respective street are accounted for. All estimates are statistically insignificant with small point estimates and equally small standard errors. This finding is very similar to results obtained by Linden and Rockoff (2008) and Pope (2008) who find strong drops in house prices for properties close to the place of lining of convicted sex offenders, but find no impact on the prices of properties slightly further away.

(TABLE 2 AROUND HERE.)

Table 3 explores the robustness of the findings to various changes in the sample and the specification. Note that the specifications in each column are identical to the ones in table 2 except for the respective variation stated. The first thing one might be concerned about is the presence of a few outliers in the price data as mentioned in section 2. Panel (a) of table 3 re-estimates equation (1) on a sample where observations in the top and bottom 1% of house prices have been dropped. Dropping these leaves the estimates essentially unchanged, suggesting that outliers do not influence the results.

(TABLE 3 AROUND HERE.)

A second question one might ask is to what extent the city quarter fixed effects matter. Panel (b) of table 3 explores this issue by replacing the LSOA fixed effects from table 2 with MSOA fixed effects. As we can see the effects generally become larger in absolute terms, but remain approximately in the same ballpark. This change in results can be seen as

an indication that other local (dis-)amenities that are correlated with crime matter for house prices as well.

Finally, one might be concerned that the local authority-month effects do not capture all confounding effects that vary over time. Panel (c) presents estimates where the local authority-month effects have been replaced by MSOA-month effects (in addition to LSOA fixed effects). In these specification the effects of MSOA-level crime is no longer identified as it is absorbed by the MSOA-month effects, which makes specification (2) and (4) and (3) and (5) identical. More importantly, the effects of street-level crime remain again very similar to the estimates in table 2 or panel (a).

In total, it appears as if the results are fairly robust to a range of sensible changes in the specification: Each case of anti-social behavior in the same street leads to an approximately 1% drop in house price, while a corresponding increase in violent crime decreases house prices by roughly 2% (or by roughly 0.5% per one standard deviation increase in each of them). Compared with the earlier literature these estimates appear to be very similar, but at the lower end of the previous findings.

What do these estimates tell us about the cost of crime? Note first that crime affects the value of properties that were sold as well as that of properties that were not sold. At the time of the 2001 census, which is the latest available data, there were 1.75 million unit postcodes in England and Wales that cover 27 million delivery points (Office for National Statistics, 2004, p. 1). Assuming that each delivery point corresponds to one property, this means that there are on average 15 properties per street/postcode. If we are also willing to assume that the average price of properties that were sold is equal to that of unsold properties we can get a monetary estimate of the cost of each crime as

*% drop in price per crime * avg. property value * avg. number of properties per street.* (2)

Note that we do not need to consider houses outside of the respective street as the estimates suggest that wider area crime plays no role for property price. Admittedly, these calculations are very approximate as (a) delivery points and properties will not be exactly equal and (b) the assumption that the value of sold properties and properties not on the market is debatable as the value of sold properties will generally be above the previous owner's reservation price while this may not be true for properties not on the market. However, while admittedly being a back-of-the-envelope calculation, it is comparable to the calculations made by Gibbons (2004) for property crime and also enables some comparisons with willingness-to-pay studies such as Cohen et al. (2004) for the US or Atkinson et al. (2005) for the UK.

Carrying out these calculations, leads us to implied costs of £34,528 for each case of anti-social behavior (£30,473 when using the results from the sample omitting the top/bottom 1%) and £65,603 (£54,530 in the restricted sample) for each case of violent crime.[10] Cohen et al. (2004) report several estimates for people's willingness-to-pay (WTP) for the avoidance of some types of violent crime for the US, specifically a of $70,000 for the avoidance of one serious assault, $237,000 for rape and sexual assault and $9.7m for murder. Converted to Dollar values my estimates for violent crime are somewhere between their estimates for serious assault and rape/sexual assault, which seems plausible given that my measures will include less serious cases of violent crime as well. Atkinson et al. (2005) report WTP estimates for common assault, serious wounding and other wounding. Their estimates range from a mean WTP of £5,282 for common assault to one of £35,844 for serious wounding. Compared to their results mine appear to be larger which might be due to differences in methodology (stated vs. revealed preference) or due to differences in what is captured as violent crime.

[10] The percentage change in these calculations is based on $exp(\tau)-1$. Results are rounded to the nearest £.

The best comparison for anti-social behavior is probably Gibbon's (2004) estimate for criminal damage, which is £104,000 per case. Compared with these results the estimates for anti-social behavior seem comparatively low. However, anti-social behavior includes a wide range of "crimes" that can be considered to be less severe than criminal damage, such as playing loud music at night or the consumption of alcohol in certain places, which again makes my estimates appear to be plausible in comparison.

5. Conclusion

Based on street level data for property sales and criminal offences, I investigated the relationship between house prices and three types of non-property crime, specifically anti-social behavior, violent crime and drug crime while controlling for unobserved neighborhood characteristics and non-parametric regional trends. My estimates, which are robust to a range of sensible specification changes, suggest that each additional case of anti-social behavior lowers house prices in the same street by approximately 1% and each additional case of violent crime by 2%. Drug crime does not appear to matter as does crime outside of the respective street, which is consistent with earlier findings. Expressed in monetary terms each case of anti-social behavior costs society between £30,472 and £34,528 and each case of violent crime costs between £54,530 and £65,603. These estimates are roughly in line with previous evidence from both stated and revealed preference studies.

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Table 1: Descriptive statistics

Variable	Mean	Std.Dev.	Min	Max
House price (2012 prices, £)	230,184.2	307,226.1	1	54,959,000
Ln(house price)	12.10	0.65	0	17.82
Leasehold	0.25	0.43	0	1
Semi-detached house	0.27	0.44	0	1
Flat	0.21	0.41	0	1
Detached house	0.23	0.42	0	1
New property	0.09	0.28	0	1
Anti-social behavior (street, count)	0.14	0.59	0	26
Violent crime (count, street)	0.04	0.24	0	13
Drug crime (count street)	0.01	0.12	0	17
Anti-social behavior (LSOA, count)	6.55	12.11	0	397
Violent crime (LSOA, street)	1.79	4.39	0	96
Drug crime (LSOA street)	0.57	2.15	0	308
Anti-social behavior (MSOA, count)	29.29	29.11	0	565
Violent crime (MSOA, street)	7.86	9.61	0	137
Drug crime (MSOA street)	2.48	5.09	0	326
Observations		338,978		
	Excluding top/bottom 1% of house prices			
House price (2012 prices, £)	213,842.4	145,441.0	40,250	1,099,000
Ln(house price)	12.09	0.59	10.60	13.91
Leasehold	0.25	0.43	0	1
Semi-detached house	0.27	0.44	0	1
Flat	0.21	0.41	0	1
Detached house	0.23	0.42	0	1
New property	0.09	0.28	0	1
Anti-social behavior (street, count)	0.14	0.59	0	26
Violent crime (count, street)	0.04	0.24	0	13
Drug crime (count street)	0.01	0.12	0	17
Anti-social behavior (LSOA, count)	6.51	12.10	0	397
Violent crime (LSOA, street)	1.78	4.39	0	96
Drug crime (LSOA street)	0.56	2.09	0	308
Anti-social behavior (MSOA, count)	29.10	28.87	0	565
Violent crime (MSOA, street)	7.81	9.54	0	137
Drug crime (MSOA street)	2.44	4.92	0	326
Observations		331,867		

Table 2: Crime and house prices, dependent Variable: ln(house price in 2012 £)

	(1)	(2)	(3)	(4)	(5)
Anti-social behavior (count, street)	-0.0185***	-0.0101***	-0.0100***	-0.0101***	-0.0100***
	(0.0018)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
Violent crime (count, street)	-0.0251***	-0.0191***	-0.0189***	-0.0191***	-0.0189***
	(0.0052)	(0.0034)	(0.0034)	(0.0034)	(0.0034)
Drug crime (count, street)	-0.0142*	-0.0068	-0.0066	-0.0067	-0.0066
	(0.0075)	(0.0061)	(0.0061)	(0.0061)	(0.0061)
Anti-social behavior (count, LSOA)			0.0002		0.0003
			(0.0003)		(0.0003)
Violent crime (count, LSOA)			0.0007		0.0009
			(0.0006)		(0.0006)
Drug crime (count, LSOA)			0.0004		0.0004
			(0.0005)		(0.0006)
Anti-social behavior (count, MSOA)				-0.0000	-0.0001
				(0.0001)	(0.0001)
Violent crime (count, MSOA)				-0.0000	-0.0003
				(0.0003)	(0.0003)
Drug crime (count, MSOA)				0.0001	0.0000
				(0.0003)	(0.0003)
Property characteristics	No	Yes	Yes	Yes	Yes
LSOA fixed effects	Yes	Yes	Yes	Yes	Yes
Local authority * month fixed effects	Yes	Yes	Yes	Yes	Yes
N			338,978		

Coefficients, standard errors adjusted for clustering on the local authority level in parentheses. */**/*** denote statistical significance on the 10%, 5% and 1% level respectively. Property characteristics are dummies for the property being a flat, a semi-detached house or a detached house (with terraced house as the base alternative), for the property being new and for the property being a leasehold.

Table 3: Robustness checks: Crime and house price, dependent Variable: ln(house price in 2012 £)

	(1)	(2)	(3)	(4)	(5)
Panel (a): Dropping top/bottom 1% of house prices					
Anti-social behavior (count, street)	-0.0176***	-0.0097***	-0.0097***	-0.0097***	-0.0096***
	(0.0016)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
Violent crime (count, street)	-0.0230***	-0.0173***	-0.0171***	-0.0173***	-0.0171***
	(0.0049)	(0.0030)	(0.0031)	(0.0031)	(0.0031)
Drug crime (count, street)	-0.0155**	-0.0064	-0.0062	-0.0064	-0.0062
	(0.0067)	(0.0054)	(0.0054)	(0.0054)	(0.0054)
Panel (b): MSOA fixed effects instead of LSOA fixed effects, dropping top/bottom 1% of house prices					
Anti-social behavior (count, street)	-0.0284***	-0.0156***	-0.0156***	-0.0156***	-0.0156***
	(0.0018)	(0.0013)	(0.0013)	(0.0013)	(0.0013)
Violent crime (count, street)	-0.0383***	-0.0260***	-0.0259***	-0.0261***	-0.0260***
	(0.0053)	(0.0034)	(0.0034)	(0.0034)	(0.0034)
Drug crime (count, street)	-0.0332***	-0.0140***	-0.0140***	-0.0140***	-0.0140***
	(0.0068)	(0.0054)	(0.0054)	(0.0054)	(0.0054)
*Panel (c): MSOA*month fixed effects instead of LA*month fixed effects, dropping top/bottom 1% of house prices*					
Anti-social behavior (count, street)	-0.0189***	-0.0110***	-0.0110***	Identical to (2)	Identical to (3)
	(0.0017)	(0.0013)	(0.0013)		
Violent crime (count, street)	-0.0253***	-0.0181***	-0.0177***		
	(0.0051)	(0.0032)	(0.0032)		
Drug crime (count, street)	-0.0132**	-0.0064	-0.0063		
	(0.0067)	(0.0055)	(0.0055)		
Property characteristics	No	Yes	Yes	Yes	Yes
LSOA fixed effects	Panels (a) and (c)	Panels (a) and (c)	Panels (a) and (c)	Panels (a) and (c)	Panels (a) and (c)
Observations	331867				

Coefficients, standard errors adjusted for clustering on the local authority level in parentheses. */**/*** denote statistical significance on the 10%, 5% and 1% level respectively. Specifications are identical to table 2 except for variation stated. Property characteristics are dummies for the property being a flat, a semi-detached house or a detached house (with terraced house as the base alternative), for the property being new and for the property being a leasehold.